

Claims

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A cooling nozzle mounting arrangement comprising:
 - a cooling nozzle assembly comprised of:
 - a mounting plate having a pin aperture located proximal to a first end of the plate and a fastener aperture located proximal to a second end of the plate;
 - a pin body having a head portion and a shaft portion, the shaft portion of the pin body having a blind bore that extends from an open first end of the shaft portion to the head portion wherein the shaft portion of the pin body is fitted into the pin aperture of the plate and affixed to the plate and a hole is cross-drilled in the assembly so as to intersect the blind bore of the shaft portion of the pin body;
 - a nozzle tube having an interior passage wherein the nozzle tube is mounted to the plate and pin body assembly by fitting a part of the nozzle tube into the hole such that the interior passage is in fluid communication with the blind bore of the pin body;
 - an engine cylinder block comprised of:
 - a cylinder with a piston assembly disposed therein, the piston assembly including a piston and a connecting rod;
 - a mounting surface in the cylinder block for mounting the cooling nozzle assembly proximal to the cylinder, the mounting surface having a fastener aperture and a pin aperture that intersects with an oil gallery passage of the cylinder block,
- wherein the nozzle assembly is mounted to the cylinder block by a fastener that engages both the fastener aperture of the mounting plate and the fastener aperture of the cylinder block such that the shaft portion of the pin body is disposed in the pin aperture so that the blind bore of the shaft portion and the interior passage of the tube are in fluid communication with the oil gallery passage of the cylinder block.

2. A cooling nozzle mounting arrangement as described in claim 1 wherein the nozzle tube is defined by a first end section, a midsection disposed at an angle to the first end section and a second end section disposed at an angle to the midsection.
3. A cooling nozzle mounting arrangement as described in claim 1 wherein the fastener aperture is tapped to receive a conventional threaded fastener.
4. A cooling nozzle mounting arrangement as described in claim 3 wherein the fastener serves both to secure the nozzle assembly to the cylinder block and, in conjunction with the pin body, maintain the radial position of the nozzle assembly in the cylinder block.
5. A cooling nozzle mounting arrangement as described in claim 2 wherein the nozzle tube is disposed such that the flow of oil is directed through an access aperture in the under-crown of the piston and into the interior of the piston.
6. A cooling nozzle mounting arrangement as described in claim 5 wherein the second end section of the nozzle tube is angled so as to provide an angular flow path.
7. A cooling nozzle mounting arrangement as described in claim 6 wherein the angular flow path intersects the piston at different locations depending on the stroke position of the piston within the cylinder so that in a first stroke position, the flow path is directing oil into the access aperture and into the interior of the piston and in a second stroke position, the flow path does not intersect the access aperture so oil is directed onto the underside of the under-crown whereby the cooling nozzle assembly serves to provide an intermittent flow of cooling oil to different parts of the piston as it reciprocates within the cylinder.
8. A cooling nozzle mounting arrangement as described in claim 5 wherein the

nozzle assembly provides a generally straight flow path into the access aperture regardless of stroke position.

9. A cooling nozzle mounting arrangement as described in claim 1 wherein additional nozzle clearance is attained by providing relief cuts in the connecting rod.

10. A cooling nozzle mounting arrangement as described in claim 1 wherein the cross-drilled hole is provided entirely within the head portion of the pin body.

11. A cooling nozzle assembly for directing a flow of oil to a piston in a cylinder block comprising:

- a mounting plate having a pin aperture located proximal to a first end of the plate and a fastener aperture located proximal to a second end of the plate;

- a pin body having a head portion and a shaft portion, the shaft portion of the pin body having a blind bore that extends from an open first end of the shaft portion to the head portion wherein the shaft portion of the pin body is fitted into the pin aperture of the plate and affixed to the plate and a hole is cross-drilled in the assembly so as to intersect the blind bore of the shaft portion of the pin body; and,

- a nozzle tube having an interior passage wherein the nozzle tube is mounted to the plate and pin body assembly by fitting a part of the nozzle tube into the hole such that the interior passage is in fluid communication with the blind bore of the pin body;

- wherein the nozzle assembly is mounted to the cylinder block by a fastener that engages both the fastener aperture of the mounting plate and a fastener aperture of the cylinder block such that the shaft portion of the pin body is disposed in a pin aperture of the cylinder block that intersects an oil gallery of the cylinder block so that the blind bore of the shaft portion and the interior passage of the tube are in fluid communication with the oil gallery passage of the cylinder block.

12. A cooling nozzle assembly as described in claim 11 wherein the nozzle tube is defined by a first end section, a midsection disposed at an angle to the first end

section and a second end section disposed at an angle to the midsection.

13. A cooling nozzle assembly as described in claim 12 wherein the second end section of the nozzle tube is angled so as to provide an angular flow path.

14. A cooling nozzle mounting arrangement as described in claim 11 wherein the fastener serves both to secure the nozzle assembly to the cylinder block and, in conjunction with the pin body, maintain the radial position of the nozzle assembly in the cylinder block.

15. A cooling nozzle mounting arrangement as described in claim 11 wherein the cross-drilled hole is provided entirely within the head portion of the pin body.